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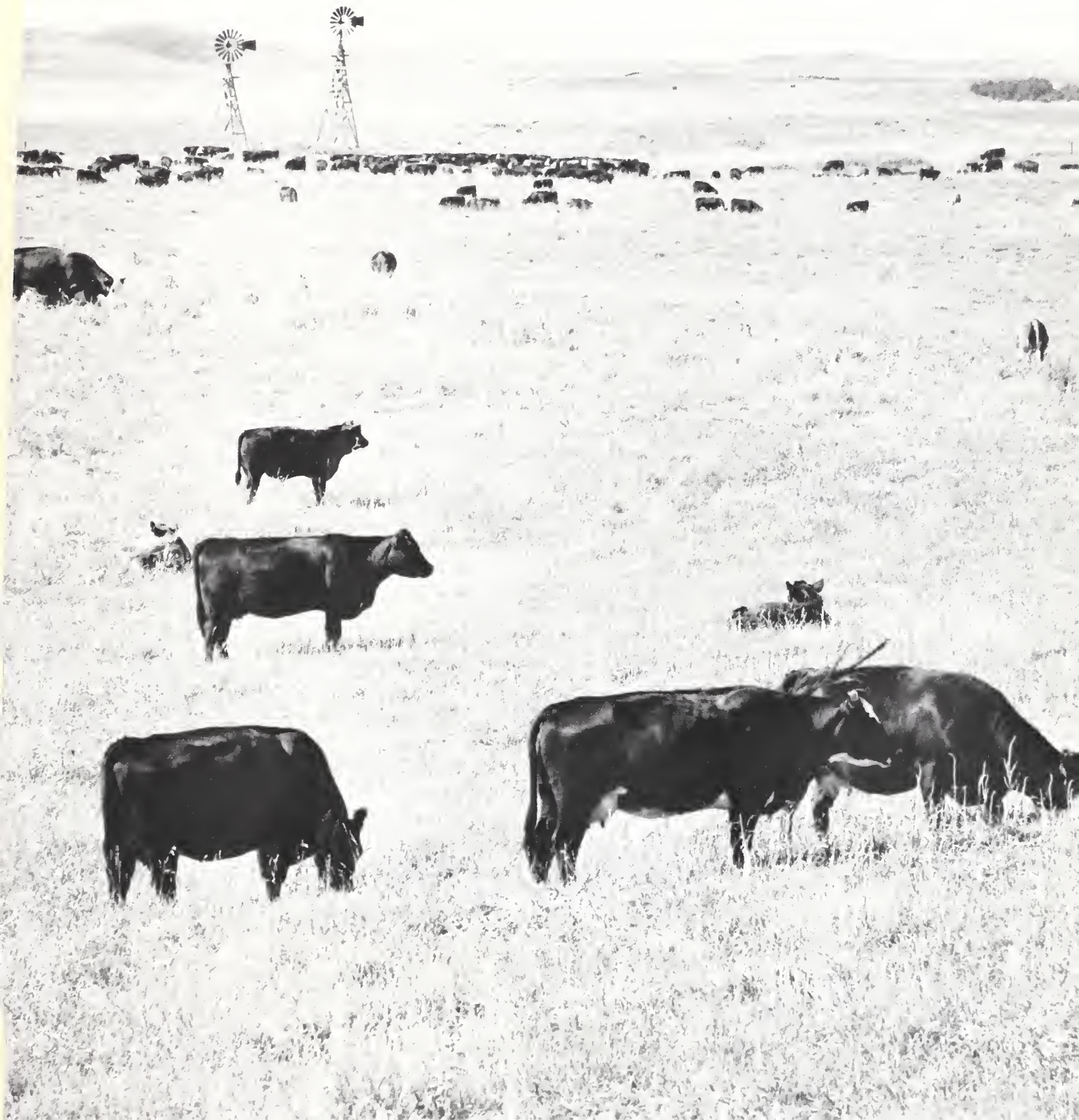
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Comments: From the SCS Chief

Taking a Close Look at Targeting

In redirecting U.S. Department of Agriculture conservation programs toward areas with significant resource problems, the Soil Conservation Service is benefiting from outstanding cooperation of several other agencies as well as conservation districts.

One good example is a three-county area of badly eroding rangeland in poor and fair condition in Utah. Working together to restore the area are the U.S. Department of the Interior's Bureau of Land Management, Utah's Department of Agriculture and Division of Wildlife Resources, SCS, the Agricultural Stabilization and Conservation Service, the Forest Service, and three local soil conservation districts. By putting the brakes on runaway soil erosion, they are restoring the land's capacity to produce forage, protecting rangeland watersheds, and improving wildlife habitat.

Most of these Utah rangeland soils are shallow, and in some areas where even 1 ton of annual soil loss per acre is too much to sustain production indefinitely, the land is losing 5 to 14 tons. Vegetation management is the first line of defense against erosion; but where it has deteriorated to the point that erosion is a problem, we need to devote special attention to restoring the vegetation.

SCS has estimated that applying and maintaining needed range management practices over a 5-year period in the targeted area will reduce average annual soil losses to 2 to 4 tons per acre.

The project is winding up its second year and so far the results have been impressive. We'll be watching it closely as we evaluate the potential of directing assistance to more such specific areas.

At the same time, SCS is looking closely at all of its targeting efforts. Reports from the field are showing that productivity has been increasing in targeted areas. That is, we are seeing more acres adequately protected from soil erosion for each staff year of effort.

This is encouraging. As with any new approach to problem-solving, however, there are some bugs to be worked out of the system.

We recognize the need for more flexibility in targeting as well as State and local participation. SCS, in consultation with the National Association of Conservation Districts, is working on a new strategy to guide our future targeting efforts.

We need your ideas and those of the agencies and groups who are our partners.



Cover: Irrigated pasture on the Maddox ranch near Imperial, Nebr. (Photo by Tim McCabe, visual information specialist, Public Information, SCS, Washington, D.C.)

All programs of the U.S. Department of Agriculture are available to everyone without regard to race, creed, color, sex, age, or national origin.

SCS Targets Assistance on Utah Rangeland

The Soil Conservation Service authorized the first rangeland area to receive targeted assistance for controlling soil erosion in three Utah counties in 1983. The targeting effort involves about 90 ranchers on 180,000 acres of severely eroding rangeland in Carbon, Sanpete, and Sevier Counties.

Estimated soil loss from erosion by both wind and water in the area ranges from 5 to 14 tons per acre each year. This rate of erosion, say range conservationists, can change the potential plant community forever and greatly reduce forage production.

"Erosion of 5 to 14 tons per acre each year may sound minor compared to many nationwide erosion rates of more than 15 tons per acre each year," said Frank

Holt, SCS State conservationist in Salt Lake City, Utah. "However, most of Utah's rangeland soils are shallow, and even 1 ton of soil loss per acre can be too much to sustain production in some areas."

A comprehensive SCS inventory of the targeted area showed that more than 370,000 tons of soil could be saved each year by treating 70,000 acres of fragile rangeland.

The area is heavily covered with Utah juniper and/or big sagebrush with some pinyon pine. Don Andrews, one of four SCS range conservationists assigned to the area, said, "Deteriorated big sagebrush and juniper-pinyon ranges can remain static, producing virtually no forage for decades without brush control and range seeding."

SCS is not alone in the targeting effort. The Price River Watershed, Sanpete County, and Sevier County Soil Conservation Districts; the USDA's Agricultural Stabilization and Conservation Service (ASCS) and Forest Service (FS); the U.S. Department of the Interior's Bureau of Land Management (BLM); the Utah State

Department of Agriculture; and the Utah Division of Wildlife Resources are all cooperating.

"This coordinated effort makes it possible for large projects like this one to be accomplished in a short time," said Alma Thompson, a rancher in the targeted area. "I believe the project will greatly improve our future economic situation and the dollars will have proved themselves to be well spent."

SCS in Utah received \$120,000 in fiscal year 1983 and \$125,000 in fiscal year 1984 to provide increased technical assistance in the targeted area. SCS had previously provided about 1 staff year of technical assistance for erosion control in the area resulting in about 2,500 acres treated annually. Since targeting began, three additional range conservationists and a soil scientist have been assigned to the area. Other technical assistance is provided as needed.

ASCS provided \$150,000 in additional cost-share funding during fiscal year 1983 and an additional \$125,000 in fiscal year 1984. ASCS authorized 60 to 75 percent cost-share funding for range

On Kent Anderson's rangeland in Sanpete County, Utah, chained trees were placed in gullies to retard erosion. Annual soil loss before treatment was estimated at 8 tons per acre and production at 25 pounds per acre. After treatment, soil loss is estimated at 2 to 4 tons per acre and production at 600 to 800 pounds per acre.



management practices such as fencing, spring developments, brush control, and seeding.

The BLM agreed, through coordinated planning, to implement several hundred acres of brush management and seeding on public lands to complement similar work on private, intermingled lands. This coordinated approach has greatly reduced the cost per unit for the rancher. In addition, BLM has loaned soil conservation district cooperators brush control and seeding equipment.

The FS has loaned rangeland drills to private landowners.

The Utah Division of Wildlife Resources has provided more than \$9,000 worth of preferred shrub and forb seed to improve the seed mixture for deer herds. The vegetation effort caused deer herds to relocate, resulting in less crop damage in the valley and fewer deer killed on the highways.

To complement these efforts, the State Department of Agriculture, through the State Soil Conservation Commission, administers what was originally known as the Rangeland Development Loan Fund. This fund provided low-interest loans to ranchers. In 1983, legislation was passed in Utah which incorporated that fund into the Agriculture Resource Development Loan (ARDL) Program.

The ARDL Program uses the same concept for farmers and ranchers for all types of resource conservation, but a specified amount is earmarked for range. Ranchers throughout Utah have seen the loan fund grow from \$250,000 in 1976 to more than \$4 million in 1984. Ranchers in the targeted area use this funding resource, along with ASCS cost-share programs, to carry out needed conservation practices.

"The coordinated funds and technical assistance I received allowed me to treat my State-leased and private ground at the same time," said Thompson who chained and seeded about 2,600 acres of rangeland in Sevier County. Chaining consists of dragging heavy anchor chain between two crawler tractors for shrub control. The chain uproots shrubs and prepares a seedbed for seeded species.

The three soil conservation districts in the targeted area review ARDL loan applications and submit them to the State Soil Conservation Commission with their recommendations for funding. The districts have made reducing soil erosion and improving range condition top priority.

SCS range specialists estimate that applying and maintaining needed range management practices over a 5-year period in the targeted area will reduce soil losses to 2 to 4 tons per acre each year. That's a 67-percent reduction in soil loss—or 370,000 tons saved per year.

Kent Anderson, a rancher in Sanpete County, is pleased with the results of the targeted efforts on his rangeland. "The land was producing almost nothing before targeting," said Anderson. "Gullies were cutting the field to pieces."

Walter Bleak, another one of the four SCS range conservationists in the targeted area, said that before treatment to Anderson's juniper-pinyon rangelands, soil loss was estimated at 8 tons per acre and forage production at 25 pounds per acre. "After the juniper-pinyon had been chained, grass seed applied by air, and the area chained again, soil loss is estimated at 2 to 4 tons per acre while forage production is 600 to 800 pounds per acre," said Bleak.

Chained trees were placed in the gullies to reduce erosion. This also provides wildlife habitat. "It's a good program," said Anderson, "because 70 percent of the economy of the county is based on the livestock industry."

Holt rates Utah's targeted range erosion control area "a winner." He says Utah's multimillion dollar cattle and sheep industries depend on the State's rangelands to supply most of the needed forage.

"If we can't slow down the erosion process on Utah's rangelands, our economy will suffer," said Holt. "We believe we have met the challenge through targeting."

Beverly J. Miller,
public affairs specialist, SCS, Salt Lake City, Utah

The Ultimate No-Till System Is a Cow on Grass

Just add some good grassland management, plus a little fertilizer and a touch of herbicide now and then, and you have a soil-building program that produces meat efficiently.

That's the soil conservation philosophy of Russell J. Lorenz, range scientist at the Agricultural Research Service's (ARS) Northern Great Plains Research Center, Mandan, N. Dak., and George A. Rogler, an agronomist who retired in 1973 but is still coming in to work. Between them the two have been working for 79 years on ways to grow more beef on the prairies of the northern Great Plains.

In this period of surplus cereal crop production and increased concern for the Nation's topsoil, Lorenz and Rogler see an opportunity to solve several problems by returning marginal cropland to grassland to stabilize erosive soils and by improving grassland management to reduce the cost of livestock production.

Lorenz says there is a tremendous but generally unrecognized potential for range improvement, increased livestock production, and more efficient water use in the semiarid Great Plains and Western States through effective fertilizer applications.

"About 75 percent of the land area in the 17 Western States is rangeland," he says, "which is more land than the entire area remaining in the other contiguous States. Even though production potential is lower than in more humid areas, the vastness of the western rangelands makes any production increase of great economic importance."

The idea that rangeland should be fertilized is not commonly accepted, Lorenz says. Until results of grassland fertilization studies at Mandan were evaluated, the widely accepted theory was that available soil water was the major factor limiting grass production in the semiarid Great Plains.

Furthermore, Lorenz says, "A fear of upsetting the ecological balance has hindered the acceptance of fertilization

as a means of increasing productiveness of grasslands in general and of native range in particular.

"There is some justification for this fear, because under certain conditions there have been rather drastic effects on plant species composition. However, our research produced many examples of favorable changes in species composition when fertilizer was used as a tool in range management and improvement. For example, 2 years of fertilization with 90 pounds of nitrogen each year and continued grazing did more to improve deteriorated mixed prairie range than did 6 years of rest, without grazing."

Even in the first studies beginning in 1944, says Rogler, it became evident that applications of nitrogen on either seeded pastures or native range would greatly increase forage production and water-use efficiency.

Rogler, who started working at Mandan in 1935, set up 10 different renovation treatments in 1949 on crested wheatgrass pastures that had been grazed for 15 years; he then evaluated the treatments for 12 years. Applying nitrogen to undisturbed crested wheatgrass sod

proved to be the outstanding renovation treatment, Rogler says. Adding just 30 pounds of nitrogen an acre boosted hay yields 2.5 times over untreated pasture, and 60 pounds yielded 3.7 times as much. Each pound of nitrogen produced an additional 30 pounds of hay for the 30-pound rate and an added 28 pounds of hay at the 60-pound rate.

"The simplest and most economical means of renovation was nitrogen fertilization," Rogler says.

Unfortunately, a weed, fringed sage-wort, also responded to the nitrogen. Lorenz, who joined ARS in 1952, added a herbicide treatment to the nitrogen studies. After one herbicide treatment, hay production averaged 995 pounds more an acre each year than untreated pastures over 4 years of measurements.

"Thirty pounds of nitrogen each year, and one herbicide treatment, increased annual yields to 4,745 pounds an acre. Land receiving neither fertilizer nor herbicide averaged 1,795 pounds during the 4-year test," Lorenz says.

Sagewort was not a problem in the unfertilized areas for 2 or 3 years after herbicide treatment; then it started com-

ing back. In the fertilized areas, nitrogen applications prolonged effectiveness of herbicide treatments by causing vigorous grass growth that hindered establishment of sagewort seedlings.

The scientists found results of nitrogen renovation of old pastures so successful that they designed another long-term study for newly established crested wheatgrass pastures using beef gains to measure effectiveness. Treatments were: no nitrogen, 40 pounds a year, 80 pounds a year, and an alfalfa-crested wheatgrass mixture. Nitrogen was applied each October as ammonium nitrate.

Yearling steers grazed the pastures from May 16 until about July 1, or for as long as it took them to remove the usable forage.

"The 40-pound treatment seemed to be the best," Lorenz says. "In only 2 of the 10 years of the test did beef production from the 80-pound treatment significantly exceed that from the 40-pound treatment."

Production from the pasture receiving 40 pounds of nitrogen was 68-percent greater than from pastures receiving no nitrogen, and 25 percent better than the



At left, beef cattle grazing on western wheatgrass range in South Dakota. At right, agronomist George Rogler (left) and ARS range agronomist Russell Lorenz inspect a test plot of blue grama grass.



grass-alfalfa mix. From a management standpoint the advantage lies in the increased number of animals per unit of land, not in the increased gain per head, Lorenz says. The carrying capacity of the pasture receiving 40 pounds of nitrogen was 72-percent greater than of that getting no nitrogen. Carrying capacity of the pasture getting no nitrogen fertilizer decreased sharply over the 10 years, while the fertilized pastures remained stable.

"Treating native grassland with nitrogen is more complicated," Rogler says, "because of differences in species and the changes that occur in the mixture of vegetation due to grazing pressure, fertilizer treatment, and other environmental factors."

"We compared treatment of 30 and 90 pounds of nitrogen on typical prairie pasture that had been grazed for 35 years. One area had been overgrazed, the other moderately grazed."

Vegetation on the heavily grazed pasture had changed from typically mixed prairie plants to almost pure blue grama. Though yields were extremely low, 30 pounds of nitrogen doubled the yield and 90 pounds more than tripled it. The few remaining western wheatgrass plants recovered quickly and accounted for most of the increase.

"Recovery of the overgrazed prairie was remarkable," Rogler says. "In 4 of the 6 years of the study, yields were highest from fertilized plots in the pastures that had been overgrazed."

Much of the response to nitrogen is by cool-season grasses that make their growth early in the season when soil moisture is at its best but nitrification activity is slow.

This study set the stage, Lorenz says, for a 6-year study on native rangeland comparing zero nitrogen and 40 pounds and 80 pounds of ammonium nitrate broadcast in October each year.

Measured in terms of beef production per acre, the results clearly show the great potential of nitrogen application, he says. Averages for the 6 years show the greatest benefits from the 40-pound-per-acre application rate. Hay yields,

sampled each August 1 from small caged areas in each pasture and weighed at 12-percent moisture, followed the same trends.

"Perhaps one of the more important findings of the study was in relation to water," Lorenz says. "The pounds of forage produced from each inch of water used increased as the nitrogen level increased. In effect, the addition of nitrogen was like adding water, the limiting factor in the semiarid Great Plains."

The simplest and most economical method of fertilizer application on grasslands is to broadcast on the surface, he adds. "We found no benefit from application with a heavy-duty drill."

From the standpoint of long-term conservation of soil and grasslands resources, and for the long-term benefit of the farmers and ranchers of the Northern Great Plains, use of the grazing ruminant animal to convert forage and roughage to human food will continue to be the most efficient system on much of the land in the northern Great Plains and Western States, Lorenz says. And management systems based on improved technology can increase productivity of these lands and protect the natural resources.

Russell J. Lorenz is located at the Northern Great Plains Research Center, P.O. Box 459, Mandan, N. Dak.

Reprinted from the May 1984 issue of *Agricultural Research*.

Great Plains Conservation Tillage—8 Years Later

The 20 conservation tillage implements on display for the 1984 Great Plains Conservation Tillage Symposium in North Platte, Nebr., proved how far conservation tillage has come in the past 8 years. Another sign was the attendance, surpassing 300 for some events, compared to under 200 for previous conferences. The conference was last held in 1976 and is scheduled every several years to allow time for new research findings.

Don Hanway, a retired extension crops specialist and professor emeritus at the University of Nebraska, says the participants represented "the leadership in conservation throughout the Great Plains, from Canada to Texas." Looking at the new planters available for conservation tillage, Hanway exclaimed, "We've come a long way!" Hanway should know since he's participated in every conference—1962, 1968, 1976, and 1984.

Hanway was one of the opening speakers at the latest conference, presenting a historical overview of the development of conservation tillage in the Great Plains. In his speech, Hanway recalled a 1962 speaker who said that the Great Plains Agricultural Council, which sponsors the conferences, "was born directly out of the stark necessity of the 'dirty thirties.' This council is not unmindful of its origin, its objectives, and its responsibilities."

Conference sponsors say "a number of people" asked for this 1984 meeting and wanted it to focus on "ways to work together in obtaining better adoption of proven conservation tillage practices." Representatives of several U.S. Department of Agriculture agencies—the Soil Conservation Service, the Agricultural Research Service (ARS), the Economic Research Service, the Farmers Home Administration, and the Federal Crop Insurance Corporation—and others, including Cooperative Extension Service (CES) administrators and specialists, helped plan and sponsor the conference.

The North Platte Experiment Station at the University of Nebraska cosponsored the conference along with CES, ARS, the

National Association of Conservation Districts (NACD), the Tennessee Valley Authority, the Soil Science Society of America, the Soil Conservation Society of America, other professional organizations, and a private farm foundation.

Nebraska State Conservationist Sherman Lewis, speaking for SCS Chief Peter C. Myers, noted the wealth of information presented at the conference and said USDA employees at the county level are the ones who have to translate this information and that is "quite a responsibility." Lewis said the various agencies must work together to promote conservation tillage.

Lewis' speech set the tone for a session on teamwork. Lewis cited the Conservation Tillage Information Center as an example of teamwork and cooperation among USDA, NACD, and industry.

Lewis also reminded participants that conservation tillage is not a panacea, but one part of a "systems approach" that includes many other practices, "such as contour farming, terraces, grassed waterways, and diversions."

Other speakers at this session spoke about teamwork at the State and county

levels. At the county level, Don Chisam, extension director for Saline County, Kans., told how he and SCS District Conservationist Duane Goerend organized a tillage council of farmers. The Saline County Tillage Council formed in 1982 and the next year received a \$10,000 government grant for conservation tillage programs. The council is an advisory group that evaluates conservation tillage "research-demonstration proposals."

A paper by ARS researchers Bill Fryrear and J. D. Bilbro, in cooperation with the Texas Agricultural Experiment Station at Texas A&M University, dealt with the role of conservation tillage in preventing another Dust Bowl. The authors warn that there is serious wind erosion in the Southern High Plains and more danger ahead if the 2-year drought continues.

Fryrear and Bilbro say even the little residue left from the dryland cotton plants which dominate the Southern High Plains offers some, but not enough, erosion protection. They say current research for dryland crops in semiarid areas suggests residue management must be combined with crop wind barriers and various tillage

methods to control wind erosion. Fryrear and Bilbro say different soils and climatic conditions require different tillage methods.

In another ARS paper, researchers used data from a tillage experiment on winter wheat at Sidney, Nebr., to show how management decisions, especially tillage practices, change the soil environment and affect crop growth.

Besides ARS researchers, speakers included CES administrators and specialists from land-grant universities throughout the Great Plains, farmers, a farm equipment dealer and custom applicator, and representatives of the USDA agencies.

Lyle Samson, the SCS conservation agronomist for North Dakota, spoke about the experiences of conservation-till farmers in the Northern Plains. Dave Sharman, SCS district conservationist in Lincoln County, Colo., spoke about how SCS can promote conservation tillage, saying it "takes a dedicated and knowledgeable conservationist to promote conservation tillage systems that change with new technology."

At the field day demonstration that capped the 3-day conference, the long row of conservation-tillage wheat seeders—ranging from a few tried-and-true machines to those barely out of the research lab—symbolized the new technology. Hanway, remembering the few pioneering no-till planters at the 1976 conference, is pleased at the growing range of choices available for conservation tillage farmers.

Copies of the proceedings of the 1984 symposium are available for \$7 plus \$1 for postage and handling, from the Distribution Center, Umberger Hall, Kansas State University, Manhattan, Kans. 66506. Checks should be payable to Kansas State University.

Donald L. Comis,
assistant editor, *Soil and Water Conservation News*, SCS, Washington, D.C.



Conservation tillage equipment lines up for inspection at the Great Plains Conservation Tillage Symposium in North Platte, Nebr.

Evaluating Windbreaks in California

Wind erosion damages 700,000 acres of California farmland every year according to Soil Conservation Service county resource inventories. To help solve the erosion problem farmers are looking at an old and relatively low-cost practice—windbreaks.

The California Department of Conservation conducted a windbreak demonstration program in cooperation with the California Association of Resource Conservation Districts and the International Tree Crop Institute to help farmers evaluate the practice. Rick Lind, former director of the program, said it will give farmers up-to-date, local information on the costs of planting and maintaining windbreaks.

Beginning in 1981, California Conservation Corps crews planted seven windbreaks on land belonging to farmers cooperating on the project. The windbreaks are on cropland, pasture and hayland, and in orchards in Kern, Lassen,

Monterey, Riverside, San Bernardino, and Solano Counties.

According to Lind, the windbreaks were planted under varied soil and climatic conditions and in association with different land uses to test how the plantings performed when combined with modern farming techniques such as no-till, contour farming, and drip irrigation systems.

The demonstration windbreaks were planted either in single rows of trees or alternating trees and shrubs, or they were planted in two or three rows of shrubs and trees arranged according to height.

Hardy, fast-growing trees were selected for the plantings and included Carolina poplar; Jacommetti poplar, an Italian hybrid; river she-oak, a fast-growing tree native to China and Australia; red gum; blue spruce; and about 10 other tree and shrub species.

Automated monitoring equipment installed at the windbreak sites recorded data on changing climate and soil conditions through June 1983. The Soil Conservation Service helped with the plantings and the monitoring effort.

The California Department of Conservation expects to publish a report on the windbreak demonstration project early next year. The report will contain information on the cost of planting and maintaining windbreaks and growth and success rates of the trees and shrubs planted. Data from the monitoring stations will show how the windbreaks affected soil and water losses, crops, and energy use.

SCS State Staff Forester Sherman Finch in Davis, Calif., said, "Most information available today on windbreaks is based on plantings in the Great Plains. When the report on this project is published, it will give us current windbreak information to use in conservation planning with farmers in California."

For more information on the windbreak demonstration project contact: Art Mills, Division Head, California Department of Conservation, 1416 9th Street, Sacramento, Calif. 95814.

Marilyn Gibson,
public affairs specialist, SCS, Sacramento, Calif.



At left, California Conservation Corps crew member plants seedling next to drip irrigation line for a windbreak in Solano County, Calif. Above, rising above a lettuce field in Monterey County, Calif., wind instrumentation monitors effects of windbreak, downwind of plantings.

FFA Students Test Woodland Skills

Judging tree types, diameters, and existing timber volume are important skills that foresters use daily. But, students competing in the Future Farmers of America (FFA) woodland judging contest in Missouri are discovering these same skills can be an essential part of land treatment decisions, and of farming in general.

What started as a small activity in southwestern Missouri has grown into a program that will be applied statewide. The concept of the contest was created by the Soil Conservation Service Forestry Committee in Missouri in 1982 to develop the interest of forest management in students. Committee members wanted a way to reach future landowners, and they knew the FFA planned to develop a forestry event for its 1985 national contest.

"We thought having our own contests in Missouri would be an ideal way to convey the importance of forestry to students and also to prepare them for national FFA competition," says Carroll Foster, SCS district conservationist in Gainesville, Mo.

Foster, a member of the original SCS Forestry Committee, says the number of schools and students participating in the second contest held last fall almost tripled the number that competed in the first field day in 1982. About 70 students from 13 schools in southwestern Missouri made up 23 teams for the second contest.

The original contest was designed within guidelines suggested by vocational-agriculture instructors. Resource foresters from the Missouri Department of Conservation also provided recommendations.

Most of the high schools involved conduct some classroom forestry training and field work prior to the contests. Through this training, instructors strive to show students that managing a farm woodlot can be an important source of income, heating fuel, farm lumber, wildlife habitat, and erosion control.

Participants in the first two contests

identified trees and shrubs by their common names during the morning. They also completed a zig-zag timber cruise, a management process used to determine the present stocking rate of trees.

In the afternoon the events turned to physical competition. Students demonstrated their skill and speed by seeing who could saw through logs with the best time. This was done individually and in pairs. They also did such things as throwing posts for distance, an event designed to teach them how to handle lengthy logs. A tug-of-war ended the event.

Both of the contests were held on the 3,000-acre Dale Cartwright/Bill Honeycutt farm. Although both owners work "in town," they are concerned about forestry management and wildlife benefits. They not only made their farm available to the field day organizers but also provided the noon meals.

Doug Funk, district supervisor for ag education in southeastern and south-central Missouri, is a member of the State FFA forestry planning committee. This committee worked on getting the contest adopted as an official FFA event. Members reviewed and established the contest rules, which will be distributed this fall to all high schools.

Six district contests are planned throughout the State. The State forestry contest is to be held next April in Columbia, Mo.

Funk says approximately 24 teams, or one-third of the teams competing at the district level, will be invited to the State competition. A team consists of three students plus one alternate. Only one team will compete in the national contest to be held November 1985.

Contest categories for State competition have been revised from the original ones. Events now include a written exam, in addition to the identification of trees and equipment from the timber industry. Categories designed to increase management awareness will once again include a zig-zag timber cruise plus judgments on timber stand improvement and map reading (an event intended to teach students how to find boundaries through land descriptions).

Funk says forestry also has been adopted as an optional FFA class for vo-ag curriculums in Missouri high schools as a result of the interest generated from these contests.

Julie Tockman,
public affairs specialist, SCS, Columbia, Mo.

South Dakota Grants Tax Break for Shelterbelts

This year the South Dakota State Legislature passed a bill granting property tax exemptions for qualified shelterbelts planted or renovated after January 1, 1984.

The bill defines shelterbelts to include "field shelterbelts, farmstead windbreaks, wildlife tree plantings, living snow fences, and other tree plantings made specifically for conservation purposes."

The bill gives the South Dakota State Conservation Commission the authority to certify shelterbelts as eligible for tax-exempt status. The bill says, "conservation districts shall adopt technical guidelines and requirements for the design, planting, maintenance, and renovation of certified shelterbelts, subject to approval of the State Conservation Commission."

For recertification, conservation districts must check each certified shelterbelt once every 3 years or whenever ownership changes. The bill sets 10 years as the maximum time for which any shelterbelt can be tax exempt. The State reimburses counties for property tax revenues lost because of the tax exemptions.

Donald L. Comis,
assistant editor, *Soil and Water Conservation
News*, SCS, Washington, D.C.

Interagency Committees Help Small Woodlot Owners

Thanks in part to their Governor's childhood experience, North Carolina's small woodlot owners are getting help in managing their woodlands. Governor James B. Hunt, Jr.'s awareness of the problems in managing small woodlots began years ago when his father, a former Soil Conservation Service district conservationist, bought a small, severely eroded farm and planted it to pines. The Governor learned firsthand that properly managed woodlands can control erosion and provide a profitable crop.

North Carolina ranks fifth in the Nation in area of commercial timberland. More than 245,000 of the State's small woodlot owners own 80 percent of the forestland, but this land is producing at only 40 percent of its potential. Reforestation, good management, and selective cuttings are difficult to practice on small woodlots. Lack of marketing opportunities plus social and technical factors compound the problem.

To help woodland managers improve their production, Governor Hunt formed a task force on small woodlots and appointed Eric Ellwood, dean of the school of forest resources, North Carolina State University, as head.

Task force members formed a Governor's Interagency Committee on Small Woodlots to provide the needed focus, visibility, sense of urgency, and coordination to help small woodlot owners. The head of the State Division of Forest Resources chairs the committee. Other committee members are the heads of the Soil Conservation Service, North Carolina State University School of Forest Resources, Extension Service, North Carolina Wildlife Conservation, North Carolina Division of Soil and Water Conservation, and the Agricultural Stabilization and Conservation Service.

Each of North Carolina's 100 counties has been directed to form local small woodlot interagency committees, which include representatives from the same agencies as the Governor's committee.

The county committees are to stimulate activities that improve small woodlot management. They develop goals, clarify program responsibilities, and coordinate activities. In 15 counties, SCS has the lead role for the small woodlot committee.

One of the more successful small woodlot committees is in Johnston County. The Johnston County committee has undertaken a project to encourage landowners to reforest cleared timberland. Local timber companies help the committee by supplying a list of people they have bought timber from. The committee sends all landowners who have recently sold timber a packet of information on reforestation.

Johnston County's committee also carries out an active information program, using tours, radio programs, and news articles to inform landowners about the value of their woodlots. At least one pulpwood manufacturer has begun operating in the county due in part to the work of the committee.

"From the beginning, not just agency people have been members of the committee," said Bill Harrell, SCS district conservationist in Johnston County. "Local timber industries as well as farmers and consulting foresters have been included. The industry has been very supportive, sponsoring meetings, tours, and equipment demonstrations. This broad base of support has helped the committee be a success."

The committee also started a local forestry association that is very active. "Most landowners don't know the value of their timberland and don't know where to go for help," said Harrell. "Associations give the professional forester a chance to talk with many landowners at one time, to explain the benefits of forest management, and to answer questions. In addition, landowners can learn from their peers—seeing and hearing what their neighbor has done means a whole lot more than lectures, publications, or mass media efforts.

"One of the first steps in establishing an association is to organize an evening meeting on forest management," Harrell continued. "The soil and water conserva-

tion district has been particularly helpful with advertisement and other support. Tree farm system members, forest farmers, and other landowners who have shown an interest in forest management are invited, along with bankers, realtors, tax preparers, CPA's, and other landowners. The meeting emphasizes economic reasons for managing forest land and types of assistance available to landowners from public agencies, consultants, and the forest industry."

The North Carolina Forestry Association (NCFA) is encouraging small woodlot participation in its program. Now NCFA holds concurrent sessions at its annual meeting: One for small woodlot owners and one for the larger commercial farms. The association has also designated positions for three landowners on its board of directors. The NCFA strongly supports the formation of local forestry associations like the one in Johnston County.

Edwin J. Young,
forester, SCS, Raleigh, N.C.

Trees Control Wind Erosion on Air Force Base

A team management effort is transforming the bleak prairie landscape of Grand Forks Air Force Base (AFB), N. Dak., which is buffeted by ever-present winds, into a more pleasant environment.

Base officials are working with the Soil Conservation Service, the North Dakota State Forest Service, and the Western Grand Forks County Soil Conservation District to increase tree plantings on the base, thereby cutting down on the wind, reducing noise levels, and limiting soil erosion and snow buildup.

The program, dubbed "Shelter Belt," has been developed to establish and maintain new plantings and renovate existing ones. The plan includes recommendations on planting sites, planting designs, tree species, number of trees, site preparation, weed control, and approximate costs.

In the first 2 years of this 5-year program almost 2,000 trees and 1,400



shrubs have been planted, as well as almost 7,000 seedlings. These plantings equal approximately 10 miles of new shelterbelts, or windbreaks, at the Base. By the completion of the program in 1986, 197,535 lineal feet of planting will have been done for a total of more than 37½ miles of new shelterbelts—this at a cost to the base of less than \$18,000 for the trees.

Some of the types of plantings which will be used include Colorado blue spruce, redosier dogwood, Siberian elm, Black Hills spruce, Rocky Mountain juniper, green ash, chokecherry, crabapple, Northwest poplar, and Silver buffaloberry.

The plantings are a row-type design, numbering from one to eight rows. In the new plantings, the first row will always be located on the north or west edge of the proposed planting site with the rows 12 feet apart, except for the plantings of Northwest poplar, which will be 16 feet apart.

Grand Forks AFB fits right in with its neighbors in Grand Forks County. During the 1930's, Works Progress Administration projects (Prairie States Forestry Project) in the county included tree planting. The county now claims to have the largest concentration of planted shelterbelts in the world.

Lt. Bonnie Saunders,
public affairs division, Grand Forks Air Force Base,
N. Dak.

SCSA Chapter Renovates Early Shelterbelt

A 49-year-old tree shelterbelt in Oklahoma is getting a facelift to celebrate its and the soil and water conservation movement's 50th anniversary in 1985.

Located on the Curtis farm near Mangum, Okla., the shelterbelt was the first planted as part of President Franklin D. Roosevelt's Prairie States Forestry Project. Commonly called the shelterbelt project, it resulted in the planting of thousands of tree shelterbelts on farms in six States—Texas, Oklahoma, Kansas, Nebraska, and the Dakotas. The U.S. Department of Agriculture's Forest Service ran the project from 1934 to 1942, after which the Soil Conservation Service assumed responsibility for shelterbelts in the Great Plains.

In March 1935, the first shelterbelt was planted on the Curtis farm, starting with an Austrian pine seedling that now stands more than 40 feet. Curtis' sons vowed to protect the shelterbelt and today his daughter-in-law Pat Curtis, the surviving landowner, says the historic shelterbelt is safe as long as she owns the land.

The Curtis shelterbelt is an example of the original model for the project. It covers an area ½-mile long and almost 170 feet wide, with trees closely spaced in 15 rows that are each 12 feet apart. The two outside rows are Austrian pines, with the rest a mixture of cottonwood, Siberian elm, honeylocust, black locust, eastern redcedar, and mulberry.

The years have taken their toll on the Curtis shelterbelt—most of the cottonwoods have died and the entire stand has deteriorated. Two years ago, the Southwest Oklahoma Chapter of the Soil Conservation Society of America (SCSA) decided to renovate the shelterbelt as part of a commemoration of 50 years of soil and water conservation.

This year, Steve York, the SCS district conservationist at Mangum, joined other SCSA members on Saturdays to remove dead and deteriorated trees and replant new ones. They stacked brush and limbs in piles to provide cover for deer, turkey,

rabbits, quail, and other wildlife.

The Oklahoma Forestry Division donated the trees while the Greer County Conservation District donated other materials. The SCSA members—most of them SCS employees—paid all other expenses themselves and used their own chain saws and supplies.

York says there are miles of similar old shelterbelts in the county and that it is the older farmers, remembering the Dust Bowl, who tend to keep the oversize shelterbelts.

Today in Oklahoma windbreaks of just two or three rows of trees are replacing the older style shelterbelts to control wind erosion. Norm Smola, the SCS State staff forester in Stillwater, Okla., says that experience and research have shown that fewer rows of trees can provide adequate protection from wind.

Another innovation is drip irrigation, which ensures a survival rate of up to 95 percent for new seedlings, compared to the 51- to 82-percent survival rates of shelterbelt project seedlings.

More landowners have been attracted by the new windbreaks that take up less land and have a higher survival rate. York says that many young farmers in his county have begun planting this new kind of shelterbelt.

Today's windbreak revival owes a debt to pioneers like Curtis.

F. Dwain Phillips,
public affairs specialist, SCS, Stillwater, Okla.

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New Publications

Land Management: Sustaining Resource Values

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of State Legislatures

This publication is the result of the 3-year project concentrating on water, land, and renewable resources and the State role in formulating resource policies. It focuses on balancing conservation and development interests and creating effective land management policies.

Land Management is essential for those wishing to expand their knowledge on the direct and indirect consequences of current land practices, the pros and cons of policy alternatives, the roles of government and private interests in resource utilization, and the keys to effective resource planning and management.

This 253-page text is available for \$20 from National Conference of State Legislatures, Marketing Department, 1125 17th Street, Suite 1500, Denver, Colo. 80202.

Land Reform, American Style

Edited by Charles C. Geisler
and Frank J. Popper

Land reform is increasingly grasping the attention of community planners, lawyers, economists, political scientists, environmentalists, community organizers, and property owners. *Land Reform, American Style* presents a realistic appraisal of the types of efforts that may improve the position of small farmers, preserve land resources, and protect property rights of minorities. It examines

the desirability and practicality of land reform as it affects American agricultural and natural resources, energy policies, minority groups, rural communities, and urban dwellers.

Each chapter is made up of papers by authors from across the Nation and political spectrum. They are activists and academics and have optimistic and pessimistic views of land reform's future. The authors do not always agree with each other, but they are helping land reform enter the political and moral agenda of the Nation.

A copy of this book may be purchased for \$28 from Rowman & Allanheld, 81 Adams Drive, Totowa, N.J. 07512.

Fundamentals of Soil Science

by Henry D. Foth

This seventh edition has been revised to illustrate the rapid increase in the knowledge about soil science during the past several decades.

In Chapter 1, the soil orders of *Soil Taxonomy* are introduced and integrated into the chapters that follow.

Included in the 15 chapters is information on the soil orders of soil taxonomy, the concept of cation exchange, and a discussion of soil pH in terms of a continuum. A separate updated chapter covers soil mineralogy. Chapters 9 through 14 have been completely updated and have additional material on fertilizers. The final chapter is new and deals with the world population-food-land problem.

The 435-page, hardbound text is enhanced by many photographs, charts, graphs, drawings, and tables.

Copies of this book are available for \$32.95 each from John Wiley & Sons, Inc., One Wiley Drive, Somerset, N.J. 08873.

Windbreaks for Conservation: An Annotated Bibliography

by California Department of
Conservation, Division of
Land Resource Protection

Prompted by a severe windstorm in December 1977, on top of historic concern over wind erosion in the State, the California Department of Conservation established the Windbreaks Demonstration Program. One of its objectives was "to assemble an annotated bibliography of informational sources related to windbreaks."

This final publication of more than 450 references in 10 major subject categories, should prove useful to researchers, farmers and ranchers, and the general public by "providing sources of information for planning and designing windbreaks to improve crop yields, protect livestock, and conserve soil, water, and energy resources."

Copies of this publication are available for \$4 and may be requested by writing California Department of Conservation, Division of Land Resource Protection, 1516 Ninth Street, Room 400, Sacramento, Calif. 95814, or calling (916) 324-0859.

Soil and Land-Use Surveys: No. 27

by Guy D. Smith

This report consists of soil and land-use surveys as part of a correlation study of the soil taxonomy of the soils of the Commonwealth Caribbean, Puerto Rico, the Virgin Islands, and Guyana. In the report an attempt is made to relate the soil series of each soil survey to all the others by classifying them in a common or uniform system.

The actual system used by the U.S. Department of Agriculture to classify the soils of the Carib-

bean, Puerto Rico, the Virgin Islands, and Guyana was selected because it provided a general system applicable to all soils. It also provided satisfactory groupings of soils that are very similar to those of the other islands of the Antilles. As outlined by the author, one of the overall purposes of the correlation of soils is to facilitate exchange between survey areas of research information and experience with problems of soil use.

Specific topics for discussion in the report include: (1) the nature of the taxonomy used to classify the soils and (2) changes in and additions to taxa in soil taxonomy. Also included in the study is an appendix which deals with taxonomic listings of the soil series and correlation of the soils of 15 islands in the Caribbean.

For information on how to order a copy of this publication write Department of Soil Science, Faculty of Agriculture, University of West Indies, St. Augustine, Trinidad, West Indies.

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